Department of E&TC

Digital Communication (Mock Paper for September 2020)

Q		Marks
1	In QAM, both amplitude and _____ of a carrier frequency are varied. a. Phase b. Frequency c. Bit rate d. Baud rate	1
2	Which of the following is most affected by noise? a. PSK b. ASK c. FSK d. QAM	1
3	If the frequency spectrum of a signal has a bandwidth of 500 Hz with the highest frequency at 600 Hz, what should be the sampling rate according to the Nyquist theorem? a. 200 samples/sec b. 500 samples/sec c. 1000 samples/sec d. 1200 samples/sec	2
4	If the baud rate is 400 for a 4-PSK, the bit rate is _____ bps. a. 100 b. 400 c. 800	2

	d. 1600	
15	If the bit rate for an ASK signal is 1200 bps, the baud rate is a. 300 b. 400 c. 600 d. 1200	1
6	Which encoding method uses alternating positive and negative values for 1's? a. NRZ-I b. RZ c. Manchester d. AMI	1
7	If the maximum value of a PCM signal is 31 and the minimum value is -31, how many bits were used for coding? a. 4 b. 5 c. 6 d. 7	1
8	Deliberate violations of alternate mark inversion are used in which type of digital-to-digital encoding? a. AMI b. B8ZS c. RZ	1

	d. Manchester	
9	RZ encoding involves _____ levels of signal amplitude. a. 1 b. 3 c. 4 d. 5	1
10	If the transmission rate of a digital communication system of 10 Mbps modulation scheme used in 16-QAM, determined the bandwidth efficiency. a. 16 bits/cycle b. 4 bits/cycle c. 8 bits/cycle d. 2 bits/cycle	2
11	What is the object of trellis coding?? a. To narrow bandwidth b. To simplify encoding c. To increase data rate d. To reduce the error rate	1
12	In trellis coding, the number of the data bits is _____ the number of transmitted bits. a. Equal to b. Less than c. More than d. Double that of	2

13	A modulator converts a (an) _____ signal to a (an) _____ signal. a. Digital, analog b. Analog, digital c. PSK, FSK d. FSK, PSK	1
14	For a binary phase shift keying (BPSK) modulation with a carrier frequency of 80 MHz and an input bit rate of 10 Mbps. Determine the minimum Nyquist bandwidth. a. 40 MHz b. 10 MHz c. 20 MHz d. 50 MHz	2
15	12 voice channels are sampled at 8000 sampling rate and encoded into 8-bit PCM word. Determine the rate of the data stream. a. 768 kbps b. 12 kbps c. 12.8 kbps d. 46.08 kbps	2
16	It is used to compare two or more digital modulation systems that use different transmission rates, modulation scheme or encoding techniques a. Energy per bit-to-noise power density ratio b. Noise power density c. Power density ratio d. Carrier-to-noise ratio	1

17	The type of modulation most often used with direct-sequence spread spectrum is a. QAM b. SSB c. FSK d. PSK	1
18	Emphasizing low-level signals and compressing higher level signals is called a. quantizing b. companding c. pre-emphasis d. sampling	1
19	A theory that establishes the minimum sampling rate that can be used for a given PCM systems a. Nyquist sampling theorem b. Nyquist minimum bandwidth c. Nyquist minimum bandwidth d. Any of these	1
20	What is the minimum bandwidth required to transmit a 56 kbps binary signal with no noise? a. 14 kHz b. 56 kHz c. 28 kHz d. 112 kHz	2

21	A transmission of binary data which involves the transmission of only a single non-zero voltage level. a. Unipolar b. Bipolar c. Polar d. Non-return to zero	1
22	The interference caused by the adjacent pulses in digital transmission is called a. Inter symbol interference b. White noise c. Image frequency interference d. Transit time noise	1
23	Matched filter may be optimally used only for a. Gaussian noise b. Transit time noise c. Flicker d. All of the above	1
24	d_{min} is defined as the Euclidean distance of coded signal in terms of _____ possible distance between all allowed sequences. a. smallest b. largest c. average d. constant	1
25	For a received sequence of 6 bits, which decoding mechanism deals with the selection of best correlated sequence especially by correlating the received	2

	sequence and all permissible sequences? a. Soft Decision Decoding b. Hard Decision Decoding c. Both a and b d. None of the above	
26	Which decoding method involves the evaluation by means of Fano Algorithm? a. Maximum Likelihood Decoding b. Sequential Decoding c. Both a and b d. None of the above	2
27	Consider the assertions related to decoding process of cyclic code. Which among the following is a correct sequence of steps necessary for the correction of errors? A. Syndrome determination after the division of r(x) & g(x) B. Addition of error pattern to received code word C. Selection of error pattern corresponding to the syndrome D. Preparation of table comprising error patterns and syndromes a. A, B, C, D b. B, A, D, C c. C, B, D, A d. D, A, C, B	2
28	For the generation of a cyclic code, the generator polynomial should be the factor of _____ a. $x^n + 1$ b. $x^n - 1$ c. $x^n /2$ d. $x^{2n}/3$	2
29	On which factor/s do/does the error probability depend/s after decoding?	2

	a. Number of error vectors b. Error probability of symbol transmission c. Both a and b d. None of the above	
30	For a (6,4) block code where n = 6, k = 4 and d_{min} = 3, how many errors can be corrected by this code? a. 0 b. 1 c. 2 d. 3	2
31	With respect to power-bandwidth trade-off, for reducing the transmit power requirement, the bandwidth needs to be _____. a. Increased b. Constant c. Decreased d. None of the above	1
32	In Viterbi's algorithm, which metric is adopted for decision making? a. Hamming distance b. Galois Field c. Hamming bound d. Parity-check	1
33	At any given time, the output of an encoder depends on _____ a. Past input b. Present input c. Both a and b d. None of the above	1
34	Generally, a primitive polynomial of degree 'm' is an irreducible polynomial in such a way that it is a factor of $x^n + 1$, where 'n' = _____	1

	a. $2^m - 1$ b. m/n - 1 c. (m+1) /2 d. m-n-1	
35	In decoding of cyclic code, which among the following is also regarded as 'Syndrome Polynomial'? a. Generator Polynomial b. Received code word Polynomial c. Quotient Polynomial d. Remainder Polynomial	1
36	According to linearity property, the _____ of two code words in a cyclic code is also a valid code word. a. sum b. difference c. product d. division	1
37	Which among the following represents the code in which codewords consists of message bits and parity bits separately? a. Block Codes b. Systematic Codes c. Code Rate d. Hamming Distance	1
38	Huffman coding technique is adopted for constructing the source code with _____ redundancy. a. Maximum b. Constant c. Minimum d. Unpredictable	1